

Amendments to and Listing of the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Please amend claims 1, 4-5 and 12, wherein strikethrough and double brackets indicates a deletion and underlining indicates additions, as follows:

1. (Currently amended) A hyperbaric oxygen therapy system comprising:

a pressure vessel containing a gas, the vessel being capable of accommodating a patient;

an oxygen breathing line at least partially within the pressure vessel, the oxygen breathing line delivering a supply of substantially pure oxygen to the patient within the pressure vessel;

an oxygen concentration measurement apparatus for monitoring a concentration of oxygen in the gas, the oxygen concentration measurement apparatus including an oxygen analyzer coupled to one of an electronic and an electro-chemical oxygen concentration sensing unit that provides an electrical output signal representative of the concentration of oxygen in the gas to the oxygen analyzer, the oxygen analyzer displaying an indication of oxygen concentration based on the electrical output signal, the oxygen analyzer including a user adjustable high alarm threshold and one of an audible and visual alarm, the respective one of the audible and visual alarm being activated when the concentration of oxygen in the gas is greater than or equal to the high alarm threshold;

a sampling system coupling the oxygen analyzer to the pressure vessel configured to conduct the gas from an interior of the pressure vessel to the oxygen analyzer from a plurality of separate locations in the pressure vessel;

an environmental control apparatus for controlling the temperature of the gas in the vessel; and

a pressure/ventilation control apparatus for controlling the pressure of the gas in the vessel.

2. (Previously presented) A hyperbaric oxygen therapy system comprising:

a pressure vessel containing a gas, the vessel being capable of accommodating a patient;

an oxygen concentration measurement apparatus for monitoring a concentration of oxygen in the gas, the oxygen concentration measurement apparatus including:

an oxygen concentration analyzer providing an output representative of the concentration of oxygen in the gas;

a plurality of gas lines connecting the oxygen analyzer to the pressure vessel for conducting the gas from an interior of the pressure vessel to the oxygen analyzer, each gas line having a port in a separate location of a wall of the pressure vessel for receiving the gas in the pressure vessel;

a sample valve located in each gas line for opening and closing the port; and

a controller for actuating the sample valve to open and close the port according to a predetermined schedule;

an environmental control apparatus for controlling the temperature of the gas in the vessel; and

a pressure/ventilation control apparatus for controlling the pressure of the gas in the vessel.

3. (Original) The hyperbaric oxygen therapy system of claim 2, wherein the oxygen sensing apparatus further comprises:

a vent valve in fluid communication with the oxygen analyzer for venting the gas from the analyzer subsequent to closing each sample valve.

4. (Currently amended) A [[The]] hyperbaric oxygen therapy system of claim 1,
~~wherein the pressure/ventilation control apparatus comprises~~ comprising:

a pressure vessel containing a gas, the vessel being capable of accommodating a patient;

an oxygen breathing line at least partially within the pressure vessel, the oxygen breathing line delivering a supply of substantially pure oxygen to the patient within the pressure vessel;

an oxygen concentration measurement apparatus for monitoring a concentration of oxygen in the gas, the oxygen concentration measurement apparatus including an oxygen analyzer coupled to one of an electronic and an electro-chemical oxygen concentration sensing unit that provides an electrical output signal representative of the concentration of oxygen in the gas to the oxygen analyzer, the oxygen analyzer displaying an indication of oxygen concentration based on the electrical output signal, the oxygen analyzer including a user adjustable high alarm threshold and one of an audible and visual alarm, the respective one of the audible and visual alarm being activated when the concentration of oxygen in the gas is greater than or equal to the high alarm threshold;

an environmental control apparatus for controlling the temperature of the gas in the vessel;

a pressure/ventilation control apparatus for controlling the pressure of the gas in the vessel;

a scrubber, a heat exchanger and a blower located within the pressure vessel, each of which is in fluid communication with the gas;

a heat pump in fluid communication with the heat exchanger by a conduit having an exchange fluid therein;

a temperature sensor in fluid communication with the gas in the vessel which provides an output representative of a temperature of the gas; and

a temperature controller having an adjustable set point which receives the output of the temperature sensor and provides a control signal to the heat pump for adjusting the temperature of the exchange fluid to thereby maintain the temperature of the gas within a predetermined range of the set point.

5. (Currently amended) A ~~[[The]]~~ hyperbaric oxygen therapy system ~~of claim 1,~~
~~wherein the pressure/ventilation control apparatus comprises~~ comprising:

a pressure vessel containing a gas, the vessel being capable of accommodating a patient;

an oxygen breathing line at least partially within the pressure vessel, the oxygen breathing line delivering a supply of substantially pure oxygen to the patient within the pressure vessel;

an oxygen concentration measurement apparatus for monitoring a concentration of oxygen in the gas, the oxygen concentration measurement apparatus including an oxygen analyzer coupled to one of an electronic and an electro-chemical oxygen concentration sensing unit that provides an electrical output signal representative of the concentration of oxygen in the gas to the oxygen analyzer, the oxygen analyzer displaying an indication of oxygen concentration based on the electrical output signal, the oxygen analyzer including a user adjustable high alarm threshold and one of an audible and visual alarm, the respective one of the audible and visual alarm being activated when the concentration of oxygen in the gas is greater than or equal to the high alarm threshold;

an environmental control apparatus for controlling the temperature of the gas in the vessel;

a pressure/ventilation control apparatus for controlling the pressure of the gas in the vessel;

a pressure controlling valve for regulating a flow of pressurized gas into the pressure vessel;

a pressure sensor in fluid communication with the gas in the pressurized vessel that outputs a signal representative of a pressure of the gas within the pressure vessel;

a ventilation valve that regulates a gas flow out of the pressure vessel; and

a controller having a programmable pressure profile, the controller controlling the pressure controlling valve to maintain a pressure of the gas in the pressurized vessel to within a predetermined range around the programmed pressure profile and controlling the ventilation valve to adjust the ventilation flow rate according to the pressure profile.

6. (Original) The hyperbaric oxygen therapy system of claim 1, further comprising a gas compressor, the compressor including an intake, an outtake, and at least one silencer connected to at least one of the intake and the outtake.

7. (Original) The hyperbaric oxygen therapy system of claim 6, further comprising a porous packing material located within the at least one silencer and filling at least part of the interior volume of the at least one silencer.

8. (Original) The hyperbaric oxygen therapy system of claim 6, wherein a first at least one silencer is connected to the intake and a second at least one silencer is connected to the outtake.

9. (Original) The hyperbaric oxygen therapy system of claim 6, wherein the packing material is formed of high density polyethylene (HPDE) material.

10. (Original) A hyperbaric oxygen therapy system having a pressure vessel containing a gas, an oxygen concentration measurement apparatus comprising:

an oxygen analyzer providing an output signal representative of a concentration of oxygen in the gas;

a plurality of gas lines connecting the oxygen sensor to the pressure vessel for conducting the gas from an interior of the pressure vessel to the oxygen analyzer, each gas line having a port in a separate location of a wall of the pressure vessel for receiving the gas in the pressure vessel;

a sample valve located in each gas line for opening and closing the port;

a vent valve in fluid communication with the oxygen analyzer for venting the gas from the analyzer; and

a controller for actuating the sample valve in each gas line to open and close the port in accordance with a predetermined schedule, and to actuate the vent valve subsequent to closing the sample valve in each gas line.

11. (Original) The oxygen concentration measurement system of claim 10, further including an alarm for announcing when the measured concentration of oxygen is outside a predetermined range.

12. (Currently amended) A hyperbaric oxygen therapy system having a pressure vessel containing a gas and an environmental control apparatus, the environmental control apparatus comprising:

a scrubber, a heat exchanger and a blower located within the pressure vessel, each of which is in fluid communication with the gas;

a heat pump external to the pressure chamber, in fluid communication with the heat exchanger by a conduit having an exchange fluid therein;

a temperature sensor in fluid communication with the gas in the vessel which provides an electrical output signal representative of a temperature of the gas; and

a digital temperature controller having an adjustable set point which receives the electrical output signal of the temperature sensor and provides a control signal to the heat pump ~~for adjusting to adjust~~ the temperature of the exchange fluid to thereby maintain the temperature of the gas within a predetermined range of the set point, the digital temperature controller being configured to display a representation of the temperature sensed by the temperature sensor and the adjustable set point, the digital temperature controller having a control algorithm that controls the control signal, the control algorithm being based on at least one of time proportioning control, error proportioning control, proportional control, integral control and derivative control, the digital temperature controller causing the heat pump to heat the gas when the temperature sensed by the temperature sensor is below the adjustable set point by a predetermined amount and causing the heat pump to cool the gas when the temperature sensed by the temperature sensor is above the adjustable set point by the predetermined amount.

13. (Original) The hyperbaric oxygen therapy system of claim 12, wherein the scrubber contains a carbon dioxide adsorbing packing material for removing carbon dioxide from the gas.

14. (Original) The hyperbaric oxygen therapy system of claim 12, wherein the blower is an injection blower.

15. (Original) The hyperbaric oxygen therapy system of claim 14, wherein the blower operates by receiving gas from a source of pressurized gas.

16. (Original) A hyperbaric oxygen therapy system having a pressure vessel containing a gas, a pressurizing compressor and a pressure/ventilation control apparatus, the pressure/ventilation control apparatus comprising:

a pressure controlling valve connected between the compressor and the pressure vessel for controlling a gas flow from the compressor into the pressure vessel;

first and second ventilation valves connected to the pressure vessel for controlling a gas flow out of the pressure vessel;

a pressure sensor for sensing a pressure of the gas within the pressure vessel and providing a pressure signal representative of the gas pressure; and

a controller having a programmable pressure profile, the controller receiving the pressure signal and controlling the pressure control valve to maintain a pressure of the gas in the pressurized vessel within a predetermined range around the programmed pressure profile, and controlling the first and second ventilation valves in accordance with the pressure profile.

17. (Original) The hyperbaric oxygen therapy system of claim 16, wherein the first valve is actuated to vent the vessel when the pressure in the vessel is decreasing and the second valve is actuated to vent the vessel when the pressure is substantially steady.

18. (Original) The hyperbaric oxygen therapy system of claim 17, further including an adjustable flow regulator connected to the second valve, wherein a venting flow rate is regulated according to an adjustment of the adjustable flow regulator when the second valve is actuated.

19. (Original) The hyperbaric oxygen therapy system of claim 16, wherein the pressure profile includes at least a first pressure set point, a second pressure set point, a time rate of change of increasing pressure from the second pressure set point to the first pressure set point, a

soak-time at the first pressure where the pressure is substantially steady and a rate of change of decreasing pressure from the first pressure set point to the second pressure set point.

20. (Original) A method for performing hyperbaric oxygen therapy in a pressurized vessel containing a gas comprising the steps of:

setting a pressure profile;

setting a treatment temperature of the gas in the pressure vessel;

setting a first ventilation rate;

performing a treatment cycle in accordance with the pressure profile wherein the pressure is first changed from a first pressure to a second pressure, after which the pressure of the gas is maintained at a substantially steady pressure during which time the gas in the vessel is vented from the vessel at the first ventilation rate, after which the pressure of the gas is decreased and the gas in the vessel is vented at a second rate and wherein during the treatment cycle, the oxygen concentration in the vessel is monitored at a plurality of locations, carbon dioxide is removed from the gas and the temperature of the gas is maintained at the treatment temperature.

21-34 (Canceled)

35. (Previously presented) The hyperbaric oxygen therapy system of claim 10, further comprising:

a first source of pressurized gas;

a second source of pressurized gas; and

an injection blower that moves gas into the pressure vessel from the first source of pressurized gas, the injection blower having an inlet fluidly coupled to the first source of pressurized gas, a discharge fluidly coupled to an interior of the pressure vessel and an induction port fluidly coupled to one of the first source of pressurized gas and the second source of

pressurized gas, pressurized gas flow applied through the induction port causing pressurized gas to be drawn through the inlet of the injection blower from the first source of pressurized gas.

36. (Previously presented) The hyperbaric oxygen therapy system of claim 35, wherein the first source of pressurized gas is bottled oxygen.

37. (Previously presented) The hyperbaric oxygen therapy system of claim 35, wherein the second source of pressurized gas is compressed air.